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10/674,569

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Karthik Janakiraman

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EXAMINER

ZERVIGON, RUDY

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KARTHIK JANAKIRAMAN,  
NITIN INGLE, ZHENG YUAN,  
and STEVEN GIANOULAKIS

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Appeal 2008-3764  
Application 10/674,569  
Technology Center 1700

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Decided: October 31, 2008

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Before EDWARD C. KIMLIN, CATHERINE Q. TIMM, and  
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 and 3-5. Claim 1 is illustrative:

1. A gas distribution face plate comprising:

a face plate body having a thickness defining a number of inlet orifices having a width of between about 0.010" and 0.018" and a depth, at

least one parameter selected from the number, the width, and the depth configured to create a uniform pressure drop of between about 0.8 and 1 Torr across edge and center regions of the faceplate as gas is flowed through the inlet orifices, whereby a thickness of material deposited at an edge of a wafer varies by 3% or less from a thickness of material deposited at a center of the wafer, when the wafer is separated from the face plate by a gap of between about 75 and 450 mils.

The Examiner relies upon the following references in the rejection of the appealed claims:

Metzner	US 6,454,860 B2	Sep. 24, 2002
Toki	JP 04-154116 A	May 27, 1992

Appellants' claimed invention is directed to a gas distribution face plate comprising, *inter alia*, a number of inlet orifices having a width between about 0.010 and 0.018". The face plate is used to provide a thickness of material deposited at an edge of a wafer which varies by 3% or less.

Appealed claim 1 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Metzner. Claims 1 and 3-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Toki.

Appellants do not present separate arguments for claims 1 and 3-5 that stand rejected under § 103. Accordingly, claims 1 and 3-5 stand or fall together.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we find that the Examiner's rejections are well-founded and supported by the prior art evidence relied upon. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer and we add the following for emphasis only.

We consider first the Examiner's § 102 rejection of claim 1 over Metzner. Appellants do not dispute the Examiner's factual determination that Metzner, like Appellants, discloses a gas distribution face plate that is used to deposit a uniform thickness of material on a wafer. The sole argument advanced by Appellants is that "[t]here is absolutely no teaching or suggestion in the Metzner Patent, regarding use of inlet orifices of the widths recited by claim 1" (Principal Br. 6, second para.). While Metzner describes an inlet diameter of 0.028", Appellants contend that "[s]uch an orifice width is, however, characteristic of the conventional face plate that is recognized by, and specifically differentiated from, the present invention" (Principal Br., sentence bridging pages 6-7).

Like the Examiner, we are not persuaded by Appellants' argument. As correctly pointed out by the Examiner, claim 1 on appeal encompasses a gas distribution face plate having an inlet orifice of "about" 0.018". It is well settled that the term "about" permits some variance, and we agree with the Examiner that the 0.028" value described by Metzner anticipates the claim recitation of about 0.018". Indeed, the Examiner properly notes that the difference between claimed value of about 0.018" and the 0.028" described by Metzner is only 0.01". Also, although Specification FIG. 16 cited by Appellants is ineffective to rebut a rejection under § 102, we do note that the figure does not present a comparison with the claimed inlet diameter of 0.018". Moreover, the Specification provides no guidance on the meaning of "about" in the context of the inlet orifice diameter.

We now turn to the Examiner's §103 rejection over Toki. Appellants do not refute the Examiner's factual finding that Toki, like Appellants, discloses a gas distribution face plate comprising small holes which produce

a uniform thickness of deposited material on a substrate. As appreciated by the Examiner, Toki is silent with respect to the precise dimensions of these small holes. However, it is by now axiomatic that where patentability is predicated upon a change in a condition of a prior art element, such as a change in size, configuration or concentration, the burden is on the applicant to establish which objective evidence that the change is critical, i.e., it leads to a new, unexpected result. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). In the present case, Appellants have not established on this record that inlet orifices within the scope of the appealed claims achieve a new, unexpected result regarding uniformity of a layer deposited on a wafer. As noted above, the data presented by Specification FIG. 16 is hardly commensurate in scope with the degree of protection sought by the appealed claims. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). In particular, while the appealed claims embrace an orifice with a width of about 0.018", Appellants' Figure 16 represents an orifice width of only 0.010". Also, Appellants have not established that the reported results would be considered truly unexpected by one of ordinary skill in the art.

In addition, Appellants have not refuted the Examiner's reasonable analysis that the presently claimed "'pressure drop of between about 0.8 and 1 Torr across edge and center regions of the face plate' is a function of many process variables including process gas flow rate, process operating temperature, and even the dimension (height) of the wafer itself . . . which is not considered part of the claimed structure of the apparatus" (Ans. 8, first para.). As such, since many process variables affect the resultant uniformity of the deposited material, we agree with the Examiner that it is reasonable to

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conclude that the apparatus of Toki, like Appellants' claimed apparatus, is capable of performing the functions recited in the appealed claims, particularly in light of the fact that Toki expressly teaches a uniform thickness distribution within 3%, the same value recited in the appealed claims.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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